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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,586	02/09/2001	Toshiro Hayakawa	Q61222	6818

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EXAMINER

JACKSON, CORNELIUS H

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/779,586

Applicant(s)

HAYAKAWA, TOSHIRO

Examiner

Cornelius H. Jackson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Paul IP*

PAUL IP

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## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Acknowledgment*

1. Acknowledgment is made that applicant's Response, filed on 12 September 2002, has been entered.
2. The indicated allowability of claims stated in the previous Office Action is withdrawn. Rejections based on the cited reference(s) follow.

### *Specification*

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Jayaraman (5513204). Jayaraman discloses a laser apparatus **FIGS. 3-7, 9-11, and**

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**17-18** comprising a semiconductor laser element **43** which emits first laser light having a first wavelength; a surface-emitting semiconductor element **40** which is excited with the first laser light, emits second laser light having a second wavelength which is longer than the first wavelength, and has an active layer **35** and a first mirror **36** arranged on one side of the active layer **35**; a second mirror **37** which is arranged outside the surface-emitting semiconductor element **40** so that the first and second mirrors **36, 37** form a resonator in which the second laser light resonates; and a modulation unit which modulates the surface-emitting semiconductor element, **see col.4, lines 38-64.**

Regarding claim 2, Jayaraman discloses all the stated limitations, **see col. 4, lines 49-64.**

Regarding claim 3, Jayaraman discloses a Schottky junction and a modulation unit, **see abstract, col. 4, lines 38-48 and claims 1-3 and 11-12.**

Regarding claim 4, Jayaraman discloses a structure for controlling the spatial mode, **see col. 1, lines 29-39 and col. 6, line 50-col. 7, line 6.**

Regarding claim 5, Jayaraman discloses all the stated limitations, **see FIG. 8.**

Regarding claims 6 and 7, Jayaraman discloses the first mirror has a limited area being arranged in parallel with a light-exit end surface of the surface-emitting semiconductor element, **see FIGS. 3-7, 9-11, and 17-18.**

Regarding claim 9, Jayaraman discloses all the stated limitations, **see FIGS. 3-7, 9-11, and 17-18.**

Regarding claims 12-13, Jayaraman discloses all the stated limitations, **see rejection to claims 1 and 2 above.**

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jayaraman (5513204). Jayaraman, as applied to claims 1-7, 9, 12 and 13 above, teaches all the stated limitations except, the size of the structure for controlling the spatial mode. It would have been an obvious matter of design choice to made the structure of any desire size, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Regarding claims 10 and 11, It would have been obvious to one having ordinary skill in the art at the time the invention was made to separate the outside mirror of the semiconductor element from the active layer, since it has been held that constructing a formerly integral structure in various elements (or formerly separate elements into one) involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

***Response to Arguments***

8. Applicant's arguments filed 12 September 2002 have been fully considered but they are not persuasive.

Applicant has argued the following:

a. Jayaraman fails to teach or suggest the limitation of "a second mirror which is arranged outside said surface-emitting semiconductor element so that said first and second mirrors form a resonator in which said second laser light resonates."

b. Jayaraman's disclosure is focused on VCSELs which are joined together, therefore it would not have been obvious to modify Jayaraman's lasers to include the claimed second mirror which is arranged outside a surface-emitting semiconductor element.

Examiner reply to Applicant's arguments are as follows:

a. A laser (surface-emitting semiconductor element) is well known in the art to have a resonant cavity which consists of two reflective ends (first and second mirrors), since the mirrors are a part of the surface-emitting semiconductor element and is formed on an end face, it is considered as being arranged outside said surface-emitting semiconductor element, as for example brick or siding are arranged outside a house.

b. See the reply to Applicant's first argument and rejection to claims 10 and 11 above.

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**Conclusion**

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakemura et al. (6404124), Nagle et al. (6236670), DenBaars et al. (5796771), Jiang et al. (6339607) and Kullander-Sjoberg et al. (6285704) all discloses a similar invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (703) 306-5981. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.



chj

October 31, 2002



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